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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,230	06/24/2003	Tianping Huang	304-35457-US	8547

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EXAMINER
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SUCHFIELD, GEORGE A

ART UNIT	PAPER NUMBER
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3672

DATE MAILED: 04/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/602,230	HUANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	George Suchfield	3672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/24/05</u> .                                                             | 6) <input type="checkbox"/> Other: _____                                    |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Pye (3,709,300).

Pye (note col. 8, lines 27-43; col. 9, lines 28-65; and the figures) discloses a process of fracturing a subterranean formation wherein a first or initial spearhead fluid is injected to fracture the formation, wherein the first fluid includes a solid, particulate diverting agent which, in one embodiment, may comprise a solid dicarboxylic acid. The solid, particulate dicarboxylic acid diverting agent temporarily seals a portion of the fracture face, such that a second fluid or fracturing fluid containing propping agent is diverted deeper into the fracture and/or formation. Thus, intrusion of the second fluid into the near-wellbore portion of the formation penetrated by the fracture “is at least partially inhibited”, as called for in claim 1.

As per claim 2, note that Pye (col. 9, line 66 – col. 10, line 9) may further employ a solvent, such as an alcohol, to facilitate removal of the solid dicarboxylic acid diverting agent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3-6, 8-11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pye (3,709,300).

In carrying out the fracturing-diverting process of Pye, the particular operating ranges and diverting agent characteristics recited in claims 2-6, 8-11 and 13 are deemed obvious matter of choice or design, based on routine experimentation for process optimization and/or the characteristics and properties of the oil formation actually encountered in the field. Moreover, Pye discloses their dicarboxylic acid component should preferably have a melting point greater than 130oF, and further includes a mesh size of up to 50 microns. Also set forth is an exemplary concentration of the solid dicarboxylic acid in the first fluid of 8-150 pounds per 1,000 gals. Thus, to further refine or tailor such operating ranges to the particular subterranean formation under treatment would fall within the purview of one of ordinary skill in the art.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Knox (3,374,835).

Knox (note col. 1, line 60 – col. 2, line 7; col. 2, line 29 – col. 3, line 48) discloses the injection of an oil-based pre-flush fluid comprising a solid particulate dicarboxylic acid as a fluid loss or diverting agent, followed by a second treatment fluid, such as an acid, which is then diverted into a less-permeable zone(s), as called for in claim 1.

As per claim 2, insofar as Knox employs myriad dicarboxylic acids, as set forth in col. 3, lines 8-36, it is deemed that at least one or more of such dicarboxylic acids will inherently possess the recited solubility characteristics.

7. Claims 3-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Knox (3,374,835).

The particular operating ranges and diverting agent characteristics recited in claims 3-13 appear encompassed by the corresponding ranges and characteristics of Knox, e.g., note that Knox may employ a dicarboxylic acid diverting agent having a melting point “greater than 100oC” and the mesh size range in col. 3. Alternatively, to operate the process of Knox within such operating ranges would have been an obvious matters of choice or design, based on routine experimentation for process optimization and/or the characteristics and properties of the oil formation actually encountered in the field.

Similarly, the particular dicarboxylic acids recited in claim 7 appear encompassed, overall, by the myriad dicarboxylic acids set forth in col. 3, lines 8-36. Alternatively, to choose a dodecanedioic acid, undecanedioic acid and/or decanedioic acid in lieu of the “heptane dioic acid” of Knox (col. 3, line 14) would have been an obvious matter of choice or design based on, e.g., relative availability and/or cost effectiveness, insofar as such similar dicarboxylic acids would be expected to exhibit similar characteristics and properties.

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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Other references cited disclose well treatment processes employing diverting agents in one or more treating fluids and use of dicarboxylic acid components in well treatment fluids and processes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Suchfield whose telephone number is 703-308-2152. The examiner can normally be reached on M-F (6:30 - 3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 703-308-2151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
George Suchfield  
Primary Examiner  
Art Unit 3672

Gs  
April 7, 2005